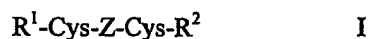


Claims:

1. A template-fixed β -hairpin mimetic of the general formula

5



wherein

the two Cys residues are bridged by a disulfide bond thereby forming a cyclic peptide;

10 R^1 and R^2 are

A-B and B-C; or B-A and C-B; or C-B and B-A; or B-C and A-B; or C-A and C-A; or A-C and A-C; or C-A and C-B; or B-B and C-B; or B-B and B-C; or A-B and C-C; or B-A and C-C; or C-B and B-B; or B-C and B-B; or C-C and B-A; or C-C and A-B; or B-B and C-C; or C-C and B-B; or A-C and B-C; or C-B and C-A; or B-C and A-C; or A-C and A-B; or B-
 15 A and C-A; A-A and C-C; or C-C and A-A;
 or A-B-C and A-B-C; or B-A-B and B-C-B; or B-C-B and B-A-B; or A-B-B and B-B-C; or C-B-B and B-B-A; or A-C-B and B-A-C; or C-A-B and B-C-A; or B-A-B and B-C-C; or B-C-B and B-A-C; or C-C-B and B-B-A; or C-C-B and B-A-B; or C-B-B and C-C-A; or A-C-C and B-B-C; or B-C-C and B-A-B; or B-C-C and B-A-C; or A-B-B and B-C-C; or B-A-B and C-C-B; or C-A-B and C-C-B; or B-B-B and B-C-C; or C-B-B and B-B-B; or B-B-B and C-C-B; or B-C-C and B-B-B; or A-B-C and B-B-C; or C-B-B and C-B-A; or A-B-C and A-C-C; or C-C-A and C-B-A; or B-A-C and A-C-B; or B-C-A and C-A-B; or C-B-A and C-B-A; or A-A-B and B-C-C; or C-C-B and B-A-A; or B-B-C and A-C-C; or B-B-C and A-B-C; or B-B-C and B-B-C; or B-B-C and B-B-B; or B-A-C and B-C-C; or C-C-B and C-A-B; or C-C-B and C-B-A; or A-B-C and B-C-C; or C-A-B and B-C-B; or B-C-B and B-B-C; or C-B-B and B-C-B; or B-C-B and B-B-B; or B-B-B and B-C-B; or C-B-B and B-C-A; or A-C-B and B-B-C; or C-B-B and C-B-B; or B-B-B and B-B-B; or B-B-B and B-B-C; or A-A-C and A-C-C; or C-C-A and C-A-A; or A-A-C and A-C-B; or B-C-A and C-A-A; or A-A-C and B-C-C; or C-C-B and C-A-A; or A-A-B and C-C-B; or B-C-C and B-A-A; or A-B-A and C-B-C; or C-B-C and A-B-A; or A-B-B and C-B-C; or C-B-C and B-B-A; or B-A-A and C-C-B; or B-C-C and A-A-B; or B-B-A and C-B-B; or B-B-C and A-B-B; or B-B-A and C-C-B; or B-C-C and A-B-B; or B-B-C and A-C-B; or B-C-A and C-B-B; or B-C-B and C-B-B; or B-B-C and B-C-B; or B-C-B and C-A-B; or B-A-C and B-C-B; or B-C-B and C-B-B; or B-A-C and A-C-B; or B-A-C and A-C-C; or C-C-A and C-A-B; or B-A-C and B-C-C; or B-C-C and A-A-C; or C-A-A and C-C-B; or C-A-A and C-C-A; or A-C-C and A-A-C; or C-B-A and C-C-A; or A-C-C and A-B-C; or C-B-A and

C-B-B; or C-B-A and C-C-B; or B-C-C and A-B-C; or C-B-B and C-C-A; or C-B-B and C-B-B; or C-B-B and C-C-B; or B-CC and B-B-C; or C-C-A and C-A-B; or C-C-A and C-B-B; or C-C-B and B-B-B; or C-C-B and C-A-A; or C-C-B and C-B-A; or C-C-B and C-B-B; or B-B-C and B-C-C; or A-C-B and B-B-C; or A-C-C and B-B-C;

5 A being any one of Asn, Gln, Asp, Glu, Thr, Ser and Gly;

B being any one of Val, Ile, Ser, Thr, Phe, Tyr, Trp and Gly; and

C being any one of Arg, Lys and Gly; and

Z is a chain of n amino acid residues with n being an integer from 4 to 20 and with each of these n amino acid residues being, independently, derived from any naturally occurring L-

10 α -amino acid.

2 A compound according to claim 1 wherein R¹ and R² are

Glu-Thr and Thr-Lys; or Lys-Thr and Thr-Glu; or

Thr-Glu and Lys-Thr; or Thr-Lys and Glu-Thr; or

15 Leu-Glu and Lys-Val; or Val-Lys and Glu-Leu; or

Glu-Leu and Val-Lys; or Lys-Leu and Val-Glu; or

Asn-Gly and Lys-Val; or Val-Gly and Lys-Asn; or

Gly-Asn and Val-Lys; or Gly-Val and Asn-Lys; or

Gly-Gly and Gly-Gly; or

20 Glu-Leu-Lys and Glu-Val-Lys; or Lys-Val-Glu and Lys-Leu-Glu; or

Leu-Glu-Lys and Glu-Lys-Val; or Val-Lys-Glu and Lys-Glu-Leu; or

Glu-Lys-Leu and Val-Glu-Lys; or Lys-Glu-Val and Leu-Lys-Glu; or

Lys-Glu-Leu and Val-Lys-Glu; or Glu-Lys-Val and Leu-Glu-Lys; or

Lys-Val-Gly and Gly-Leu-Glu; or Glu-Leu-Gly and Gly-Val-Lys; or

25 Val-Lys-Gly and Gly-Glu-Leu; or Leu-Glu-Gly and Gly-Lys-Val; or

Val-Gly-Lys and Glu-Gly-Leu; or Leu-Gly-Glu and Lys-Gly-Val; or

Gly-Gly-Gly and Gly-Gly-Gly.

3. A compound according to claim 1 or 2 wherein Z contains

30 -Arg-Gly-Asp-,

-Glu-Leu-Arg-,

-Arg-Lys-Lys- or

-Lys-Gly-Phe-

or consists of, or contains

35 -Val-Arg-Lys-Lys- [SEQ ID NO:1],

-Lys-Lys-Tyr-Leu- [SEQ ID NO:2],

42

- Trp-Leu-Asp-Val- [SEQ ID NO:3],
-Tyr-Ile-Arg-Leu-Pro- [SEQ ID NO:4],
-Tyr-Ile-Gly-Ser-Arg- [SEQ ID NO:5],
-Ile-Lys-Val-Ala-Val- [SEQ ID NO:6],
5 -Pro-Pro-Xaa-Xaa-Trp- [SEQ ID NO:7] wherein Xaa can be residues of
any naturally occurring L- α -amino acids,
-Leu-Trp-Tyr-Ser-Asn-His-Trp-Val- [SEQ ID NO:22],
-Lys-Trp-Phe-Ser-Asn-His-Tyr-Gln- [SEQ ID NO:23],
-Phe-Leu-Ala-His-Tyr-Ala- [SEQ ID NO:24] or
10 -Leu-Trp-Tyr-Ser-Asn-His-Trp-Val-Lys-Trp- [SEQ ID NO:25].
4. A library of template-fixed β -hairpin mimetics comprising a plurality of compounds according to any one of claims 1 to 3.
- 15 5. A library according to claim 4 wherein the template fixed β -hairpin mimetics are fused to at least a portion of phage coat protein, and the template fixed β -hairpin mimetics are displayed on the surface of a phage or phagemid particle.
- 20 6. A method of screening for template fixed hairpin β -mimetics having a template that conformationally stabilizes a β -hairpin and which is capable of binding to a specific binding partner comprising the steps of
- a) providing a library of template fixed β -hairpin mimetics according to claim 3 or claim 4;
b) contacting the library of step a) with a binding partner;
c) selecting from the library peptides capable of forming a non-covalent complex with the
25 binding partner; and
d) optionally isolating the peptides or determining of sequence by DNA-analysis of step c).
7. A method according to claim 6 wherein the binding partner is selected from the group consisting of an antibody, an enzyme, a receptor and a ligand.
30
8. A peptide which has been determined and optionally isolated by the process according to claim 6 or 7.
9. A synthetic peptide having a structure which is identical to the structure of the
35 peptide according to claim 8.